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AUTHOR Terzian, Peter J.
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ABSTRACT

A questionnaire was distributed to 31 public school districts in the counties of Albany, Schenectady, and Saratoga in New York State to determine the extent of microcomputer utilization, as well as attitudes surrounding their use. The survey yielded a 29 percent return. The responding schools indicated that the predominant use is in math for grades 3-12, with the accent on programming in the 11th and 12th grades; software is purchased, except where students are learning programming or in chemistry where students and teachers are doing the programming; in some cases the microcomputers need to be made more accessible to a greater number of students; administrators' attitudes toward microcomputers are generally favorable; and teachers' responses ranged from "just a tool" to "impressed." Eight references are listed. (LLS)

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Microcomputers in Public Schools:

Albany, Schenectady, and Saratoga Counties of New York State

Peter J. Terzian

December 1981

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Microcomputers are slowly finding their way into public schools. Will they be well received? Can their potential be realized? Does anything set them apart from previous "revolutionary" applications of technology, such as television or film?

Survey

A questionnaire was distributed to 31 public school districts in the counties of Albany, Schenectady, and Saratoga of New York state. This was done to determine the extent of microcomputer utilization as well as the attitudes surrounding their use. A 29% return on the survey yielded the following results.

The responding schools indicated a predominant usage in Math for grades 3-12, with the accent on programming in the 11th and 12th grades. Other uses include the gifted program (grades 4-6), chemistry lab (grade 11), remedial drills (grades 7-12), general computer literacy (grades 4-12), and in one case, administration. Only one of the respondents does not currently use microcomputers. Overall, the computers are used primarily as a tool, secondly as a tutor, and rarely as a tutee (Taylor '80).

Software is purchased, except where students are learning programming or in the case of the chemistry application, where students or a teacher are doing the programming. The teacher writes programs to evaluate and graph students' data. The students learn program structure and applications to math.

Although no specific commercial software was named, some use of games, simulations, and drills was indicated for literacy and math applications. There also seems to be a general concern over the lack of a variety of good commercial software. Perhaps the real concern, however, is the difficulty in evaluating available software.

Radio Shack, Apple, and Atari all have their own versions of educational programs. Borg-Warner has computerized their instructional materials. Digital and IBM offer a plan to market software submitted by teachers and other personal computer users. Such programs will be user-tested and possibly more applicable to current curriculums. Review services are also available to aid in effective software selection. MicroSIFT of the Northwest Regional Educational Laboratory and the Capital Area School Development Association each provide review services.

Some respondents bemoan their inability to make the computers more accessible to a greater number of students. An increase in the quantity of machines is one answer to this dilemma. Location of the machines within each school building is also an important factor. Several locations are being tried. The number of school districts using a particular location is indicated below. Supervision of these locations is by teachers, except in two districts where teachers' aids are the supervisors.

Math Resource Room	4	Classrooms	4
Resource Room	3	Library	3
Computer Room	4	Guidance	1
Media Center	1	Overnight Loan	2

Comment by administrators indicates a favorable attitude toward microcomputers. They view the machines as "expanding", "popular", and even "essential". Some hope to see the development of many applications to benefit all students and faculty.

One concern of the administrators is the fast pace of change within the technology itself. Change and growth within the microcomputer industry is definitely outpacing that in many other industries. There are already three or four major manufacturers of microcomputers. Each has at least two models on the market. Each model has differing capabilities. On top of that is the entrance of major American computer manufacturers as well as the Japanese electronics industry into the microcomputer market. Any current issue of Business Week usually includes at least one article on this burgeoning industry.

Another question is raised concerning effectiveness. Control Data Corporation's PLATO system has been proven effective (Brown '81). Other CAI has also been studied and proven effective (Vinsenhaler '72). Even though there are cases where CAI has not been effective, the microcomputer is a viable alternative.

The teachers' responses range from "just a tool" to "impressed". Some share the vision of expanded usage but also cite the prerequisite for teachers to learn more about the operation and application of micros to education. They also observe the micros as "effective educational tools". There is one concern of "less control over what is being taught and the method of teaching". This would depend on who writes or accepts the software.

The microcomputer as a tool is being recognized by educational organizations as well. The Carnegie Commission on Higher Education predicts that "the new electronic technology is potentially the greatest educational innovation since the invention of the printing press (US News '79)". They believe the key is in its versatility.

The students' views of microcomputers are derived from both the survey and letters received from students in a gifted program (grades 4-6). If there is one word most often used to define their opinion of the micro, it is "fun". Motivation is currently self-contained in any use of the computer with this attitude. A couple of students enjoy the challenge of debugging their own programs (something most programmers dread). One student observes that the "faculty . . . seems almost . . . unaware of the power of the tools they have purchased." Others tell of how they've gone on to write more programs on their own. They also plan to teach their friends how to use the computer. This brings back to mind the administrator's concern for the fast pace of change and the teacher's request to further educate the faculty. Can we keep up?

Other Applications

"A child entering school in 1900 had a vocabulary of 1000 words and in first grade was taught 350 words. In 1980 the child enters school with an 8000 word vocabulary and still is only taught 350 words (Scanlon '80)". The computer could provide a powerful means of dealing with this lag. The University of Maryland already offers a full semester of history via computer terminals and video tape (US News '79). Microcomputers with word processing capabilities are being used

as teaching tools in language arts (Hennings '81). A more obvious application of word processing is in Business Education, as micros begin to compete with the typewriter in even small offices.

Summary

The microcomputer is finding its way into the public schools and into many aspects of teaching and curriculum. Most administrators are all for this new and powerful (and economical) tool. Teachers are finding out from experience how effective the micro can be -- and students are excited about using these machines.

Conclusions

The cost of a micro is within the reach of any school district, starting at $100.00 for the Sinclair ZX-81, unassembled. This model, with appropriate software, could become a common classroom tool. Vendors are even supplying schools with reports on where funding may be found for purchase of microcomputers (i.e., Bell & Howell). The usual barrier of cost is therefore not a problem.

Software is being developed slowly because of a scarcity of programmers. Teachers and schools are being asked to help in the development process to overcome this problem. This opportunity for cooperation between industry and educational institutions is very healthy for both participants.

The potential of microcomputers can be realized by the public schools. That potential should exceed previous media because of two outstanding features of the new technology--individualization and interactiveness. These features leave creativity, adaptability, and development of this medium in the hands of any individual who is willing to learn. The cost is low, and support from government, industry, and educational leaders is very positive.

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